DENON

Hi-Fi Integrated Amplifier

SERVICE MANUAL
MODEL PMA-707
SOLID-STATE
INTEGRATED AMPLIFIER

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NIPPON COLUMBIA CO., LTD.

SPECIFICATIONS

POWER AMPLIFIER SECTION

Rated Output Power:	Both channel driven (TUNER → SP OUT) 4 ohm 1 kHz DIN T.H.D. 1% : 40 W + 40 W 4 ohm 20 Hz – 20 kHz : 35 W + 35 W 8 ohm 20 Hz – 20 kHz : 25 W + 25 W
Total Harmonic Distortion:	0.05% (20 Hz – 20 kHz at –3 dB rated output 8 ohm Load)
Intermodulation Distortion:	Below 7 kHz / 60 Hz: 1/4 0.03% (at amplitude output equivalent to rated output)
Power Band Width:	10 Hz – 40 kHz (IHF T.H.D. 0.1%)
Frequency Response:	5 Hz – 150 kHz $^{+0}_{-3}$ dB (at 1 W output)
Output Impedance:	0.18 ohm (1 kHz)
Output Terminals:	Speaker: A or B Load 4 – 16 ohm (IEC) A + B Load 8 – 16 ohm
Headphone	Stereo headphone

PRE AMPLIFIER SECTION

Pre Amplifier Output:	Maximum Output: 10 V (at 47 k ohm Load) Rated Output: 150 mV
Pre Amplifier Input:	Maximum Input: 160 mV (1 kHz)
Input Sensitivity/ Input Impedance:	PHONO MM: 2.5 mV 47 k ohm CD/VIDEO, TUNER/AUX 150 mV 30 k ohm
RIAA Deviation:	PHONO MM: within ±0.5 dB (20 Hz – 20 kHz)

GENERAL CHARACTERISTICS

SN Ratio (IHFA Weight):	PHONO MM: 72 dB (input terminals short-circuited for 2.5 mV input) CD/VIDEO, TUNER/AUX: 96 dB (input terminals short-circuited)
Tone Enhancer:	Low frequency 100 Hz ± 6 dB High frequency 10 kHz ± 6 dB
EQ Subsonic Filter Characteristics:	16 Hz (–12 dB/oct.)
AC OUTLET: (For U.S.A., Canada and Asia)	SWITCHED x 2, 100 W (Total) UNSWITCHED x 1, 250 W
POWER SOURCE:	Germany and France AC 220 V, 50 Hz; U.K. and Australia AC 240 V, 50 Hz; Asia AC 110/ 120/220/240 V, 50/60 Hz (Multiple)
POWER CONSUMPTION:	80 W (IEC) (Multiple)
DIMENSIONS:	434 mm (W) x 97.5 mm (H) x 270 mm (D) (including rubber feet, control knobs, and terminals)
WEIGHT:	5.2 kg

Design and specifications are subject to change without prior notice.

NOTE: The following codes correspond to the appropriate models.
E2 for Europe, EK for U.K., and E1 for Asia.
This Service Manual is prepared based on E2 and black version.

BLOCK DIAGRAM

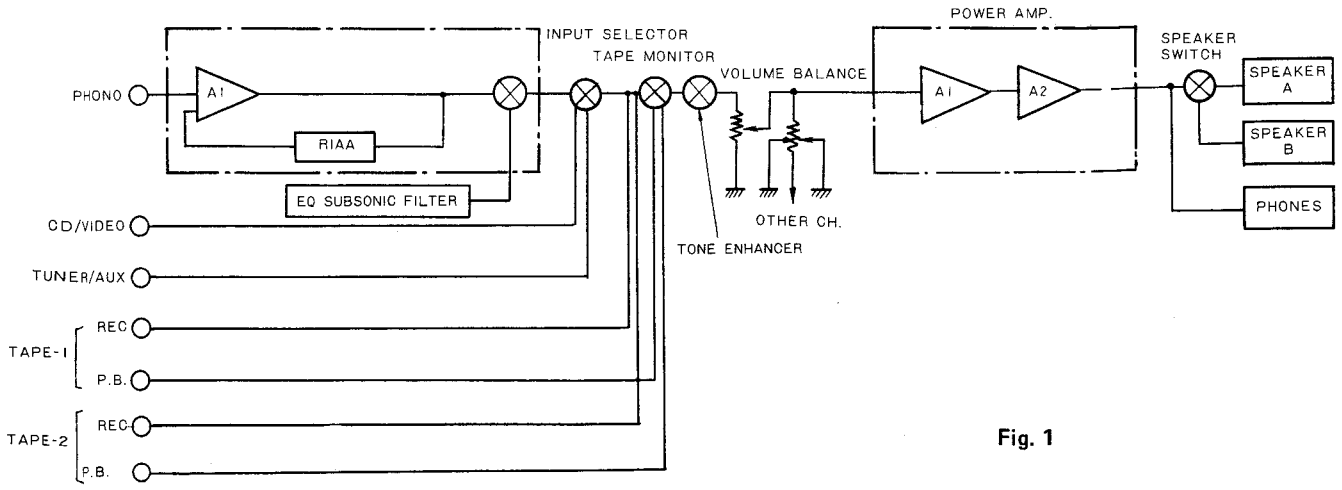


Fig. 1

CONTROLS AND DESCRIPTIONS

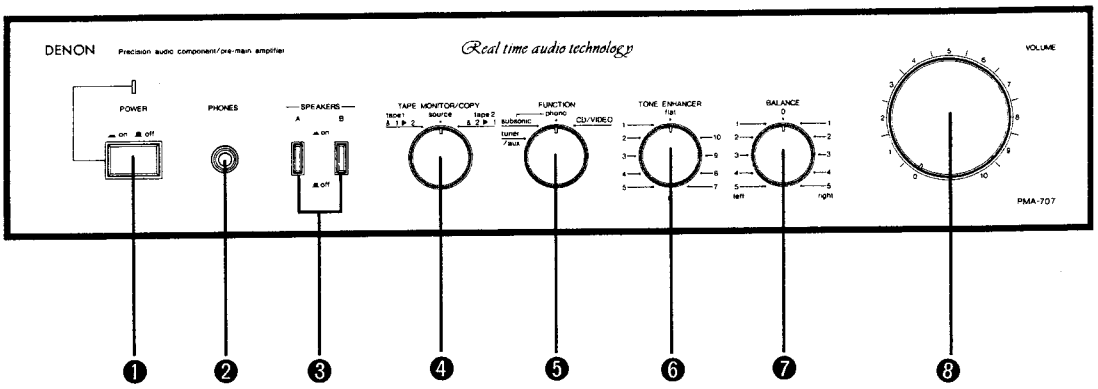


Fig. 2

❶ POWER (Power On-Off Switch)
❷ PHONES (Headphone Jack)
❸ SPEAKERS (Speaker Changeover Switch)
❹ TAPE MONITOR/COPY (Tape Monitor/Copy Switch)
❺ FUNCTION (Input Selector Switch)
• CD/VIDEO, • Phono, • subsonic, • tuner/aux
❻ TONE ENHANCER (Tone Enhancer Control)
❼ BALANCE (Balance Control)
❽ VOLUME (Volume Control)

CONNECTIONS

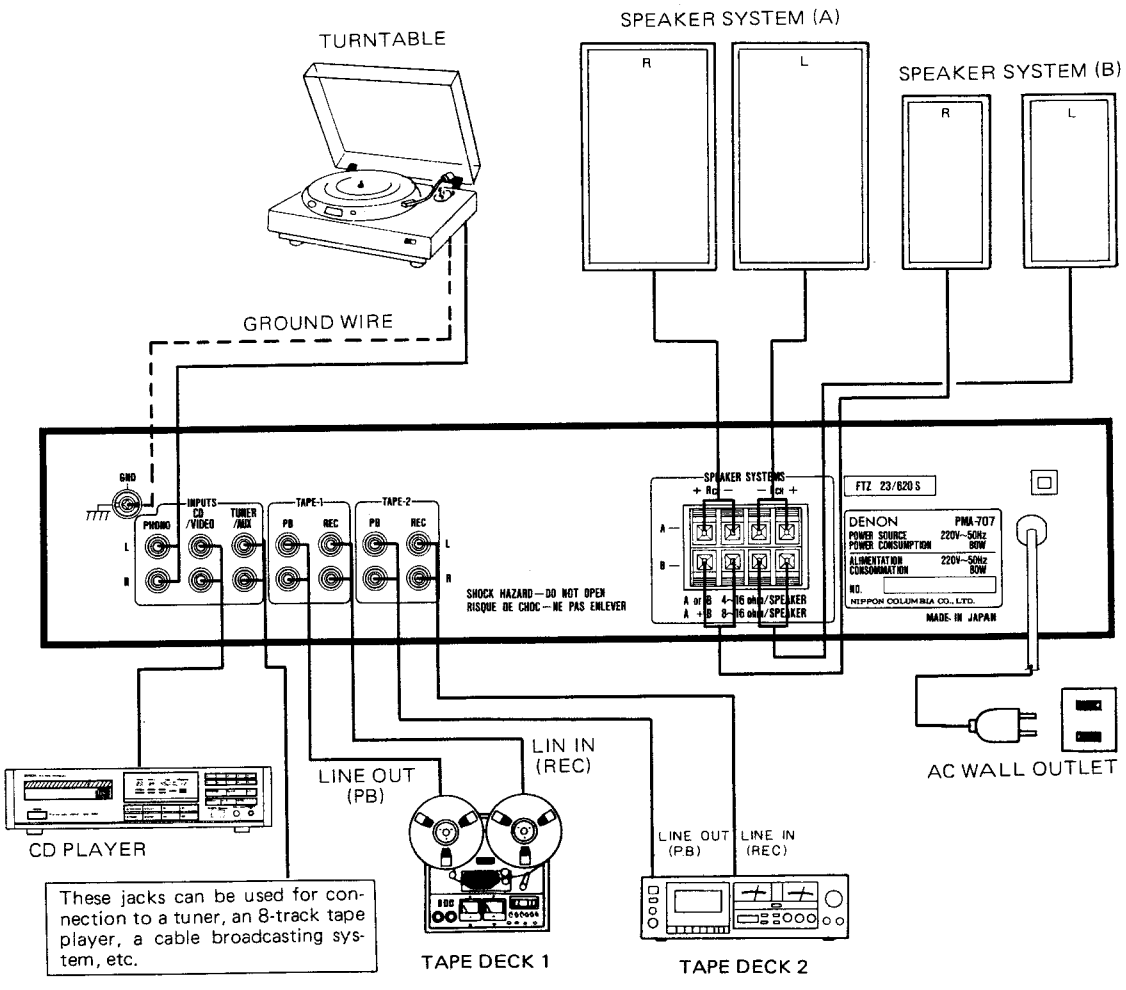


Fig. 3

METHOD OF ADJUSTMENTS

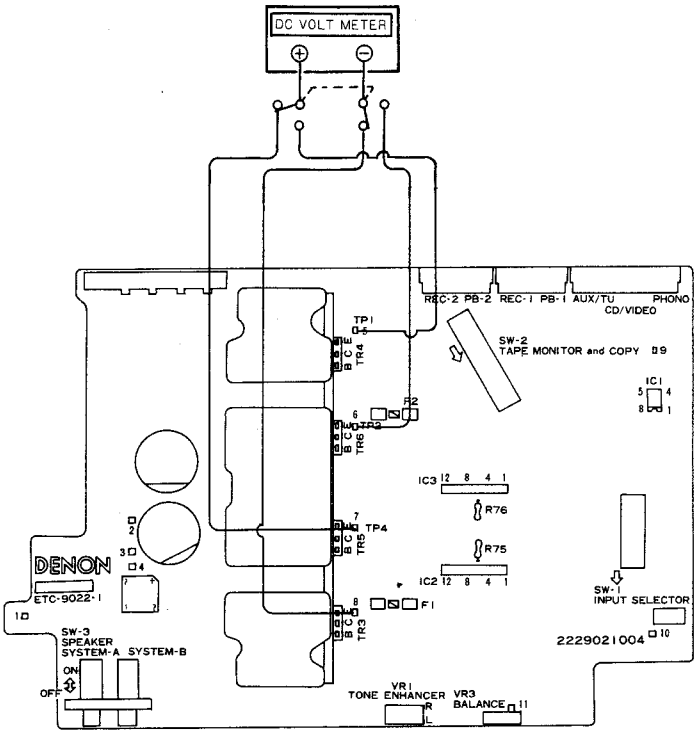


Fig. 4

IDLE CURRENT ADJUSTMENT (Fig. 4)

1. Keep the unit away from direct wind blown by an air-conditioner and an electric fan, and keep the unit under normal conditions. Adjust the range of ambient temperature to 15 – 30°C.
2. Set the following switches as follows:
   - POWER (power switch) to off
   - VOLUME (VOLUME CONTROL) to 0 (↺)
   - SPEAKERS (speaker terminal) to no load (speakers disconnected)
3. Remove the top cover and connect a DC digital voltmeter to the test points of ETC9022 (Power Amp units) (between the positive terminal TP4 ⊕ and the negative terminal TP3 ⊖ , and between the positive TP1 ⊕ and the negative terminal TP2 ⊖).
4. (1) Connect the power source cord to an AC outlet and turn on the power switch; read the measured value after 3 minutes or when the measured value is within a tolerance 2 mV ~ 20 mV (DC), adjust the idling current manually as follows.
   (2) When the voltmeter reads 1 mV (DC) or less under the condition of item (1), disconnect the 47 ohm from resistors R75 and R76.

REMOVAL OF EACH SECTION

1. How to remove top cover (Fig. 5)

1) Remove the six screws holding the top cover in place.
2) Pull out the sides of the cover to free it, then lift off the cover.

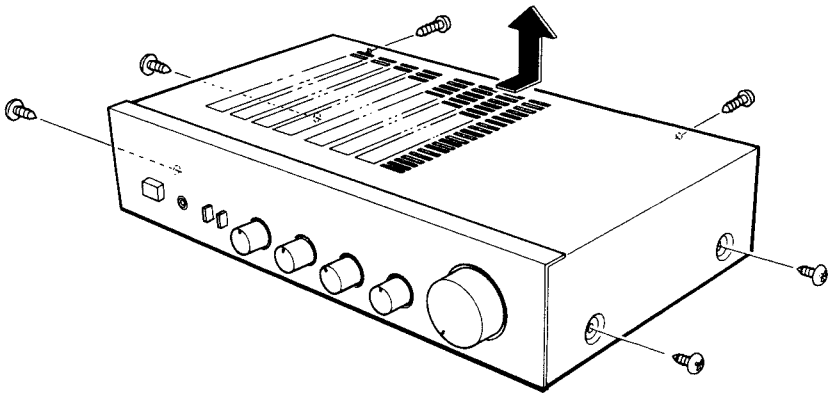


Fig. 5

2. How to remove the rear panel (Fig. 6)

1) Remove the twelve screws holding the rear panel in place.
2) Pull the rear panel toward you and remove it.

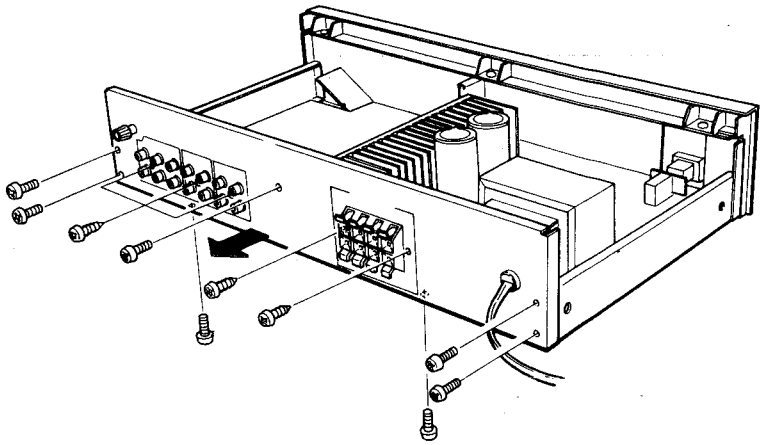


Fig. 6

3. How to remove the front panel (Fig. 7)

1) Pull off the five knobs.
2) Remove the six screws holding the front panel in place.
3) Pull the front panel toward you and remove it.

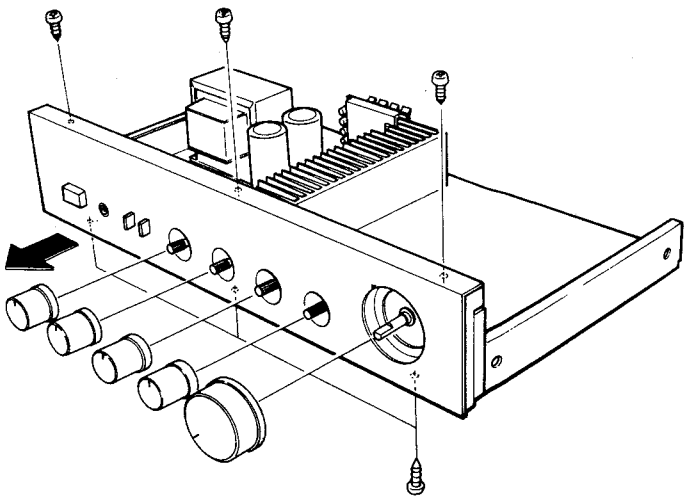


Fig. 7

PRINTED WIRING BOARD PATTERNS AND PARTS LIST

ETC9002 POWER AMP UNIT PARTS LIST For E2, EK, EA

Ref. No.	Part No.	Part Name & Descriptions
		SEMICONDUCTORS
IC001	2630257001	M-5218P (MITSUBISHI) IC
IC002 003	2630206007	μPC1225H (NEC) IC
TR001 002	2730198015	2SC1815 (BL) TRANSISTOR
TR003 004	2730237031	2SC2577 (O/Y) TRANSISTOR
TR005 006	2710136039	2SA1102 (O/Y) TRANSISTOR
TR007	2730198015	2SC1815 (BL) TRANSISTOR
TR008	2710102005	2SA1015 (Y) TRANSISTOR
TR011 012	2730198015	2SC1815 (BL) TRANSISTOR
TR013 014	2710102005	2SA1015 (Y) TRANSISTOR
D003 004	2760049011	1S2076A DIODE
D005 006	2760249002	HZ18-2 ZENER
D009	2760305001	S4VB20 DIODE
D901	2760049011	1S2076A DIODE
D902	2760236031	HZ5C-1 ZENER
LE001	3939165013	SEL1123R (RED) LED
		RESISTORS (not included Carbon Film ±5%, ¼W Type)
⚠ R067 068	2412314023	470 ohm ±5% ¼W CARBON (NB)
⚠ R077 ~080	2442013080	0.22 ohm ±5% 1W METAL OXIDE (NB)
⚠ R081 082	2412322002	10 ohm ±5% ¼W CARBON (NB)
⚠ R091 092	2412322002	10 ohm ±5% ¼W CARBON (NB)
⚠ R095 096	2412314023	470 ohm ±5% ¼W CARBON (NB)
⚠ R103 104	2412314023	470 ohm ±5% ¼W CARBON (NB)
VR001	2119008001	VARIABLE RESISTOR 100 kohm LOUD VR
VR002	2119006100	VARIABLE RESISTOR 100 kohm MAIN VR
VR003	2110198004	VARIABLE RESISTOR 250 kohm BAL. VR
		CAPACITORS
C003 004	2533627000	100PF ±5% 50V CERAMIC
C005 006	2544132005	10μF 16V ELECTROLYTIC
C007 008	2531004007	1000PF ±10% 50V CERAMIC
C009 010	2544127007	220μF 6.3V ELECTROLYTIC
C011 012	2544146004	1μF 50V ELECTROLYTIC
C013 014	2554178004	0.024μF ±5% 50V PLASTIC FILM
C015 016	2531009002	6800PF ±10% 50V CERAMIC
C017 018	2544147003	2.2μF 50V ELECTROLYTIC
C019 020	2544146004	1μF 50V ELECTROLYTIC
C051 052	2531062007	3900PF ±10% 50V CERAMIC
C053 054	2551076002	0.022μF ±10% 50V PLASTIC FILM
C055 056	2544133004	22μF 16V ELECTROLYTIC
C057 058	2533627000	100PF ±5% 50V CERAMIC

Ref. No.	Part No.	Part Name & Descriptions
C059 060	2544146004	1μF 50V ELECTROLYTIC
C061 062	2533627000	100PF ±5% 50V CERAMIC
C063 064	2544133004	22μF 16V ELECTROLYTIC
C067 068	2533603008	10PF ±0.5PF 50V CERAMIC
C069 070	2531024003	0.01μF +80% −20% 50V CERAMIC
C071 072	2544132005	10μF 16V ELECTROLYTIC
C075 076	2533631009	150PF ±5% 50V CERAMIC
C077 078	2531027000	0.1μF +80% −20% 50V CERAMIC
C079 ~084	2544146004	1μF 50V ELECTROLYTIC
C103 104	2531007004	3300PF ±10% 50V CERAMIC
C111 112	2544164031	220μF 25V ELECTROLYTIC
C113 114	2531024003	0.01μF +80% −20% 50V CERAMIC
C115 116	2544212006	10000μF 45V ELECTROLYTIC
C117	2531151002	4700PF +100% −0% 500V CERAMIC
⚠ C118	2538003014	4700PF ±20% 400V (AC) CERAMIC
C131	2531025002	0.022μF +80% −20% 50V CERAMIC
C135 ~138	2544089022	100μF 50V ELECTROLYTIC
C201 202	2544146004	1μF 50V ELECTROLYTIC
		SWITCHES FUSE INDUCTORS
SW001	2124509003	SLIDE SW (4-4) REMOTE INPUT
SW002	2124254002	SLIDE SW (REMOTE) TAPE MONI.
SW003	2129513007	2P PUSH SW SP. SW
⚠ SW004	2124409006	POWER SWITCH POWER
⚠ F001 002	2061040010	FUSE 3.15A Ⓕ POWER OUT
⚠ F003	2061015029	FUSE 1.0A AC LINE
L001 002	2359002003	INDUCTOR (390μH) PHONO-IN
		OTHER PARTS
	2229021004	P.W. BOARD
	2090008120	JUMPER WIRE P=10 mm USED 135
	2090051009	0 ohm JUMPER TAPE
	EP-5667H1	TERMINAL PIN USED 15
	FEP-1261	JUMPER WIRE USED 3
	2020022008	FUSE HOLDER USED 6
	2030241057	1P CONTACT ASS'Y USED 2
	2050190023	2P NH CONNECTOR BASE
	4179002100	POWER RADIATOR
	4129016104	BRACKET USED 2
	4737002005	TAPPING SCREW(S) 3x6 USED 4
	4700012022	PAN SCREW WITH SW, W 3x12 USED 4
	2048167000	HEAD PHONE JACK
	2050151004	8P PUSH TERMINAL FOR SP
	2050150005	4P CONNECTOR BASE USED 2
	2050152003	6P CONNECTOR BASE
	2032115000	2P CONNECTOR CORD

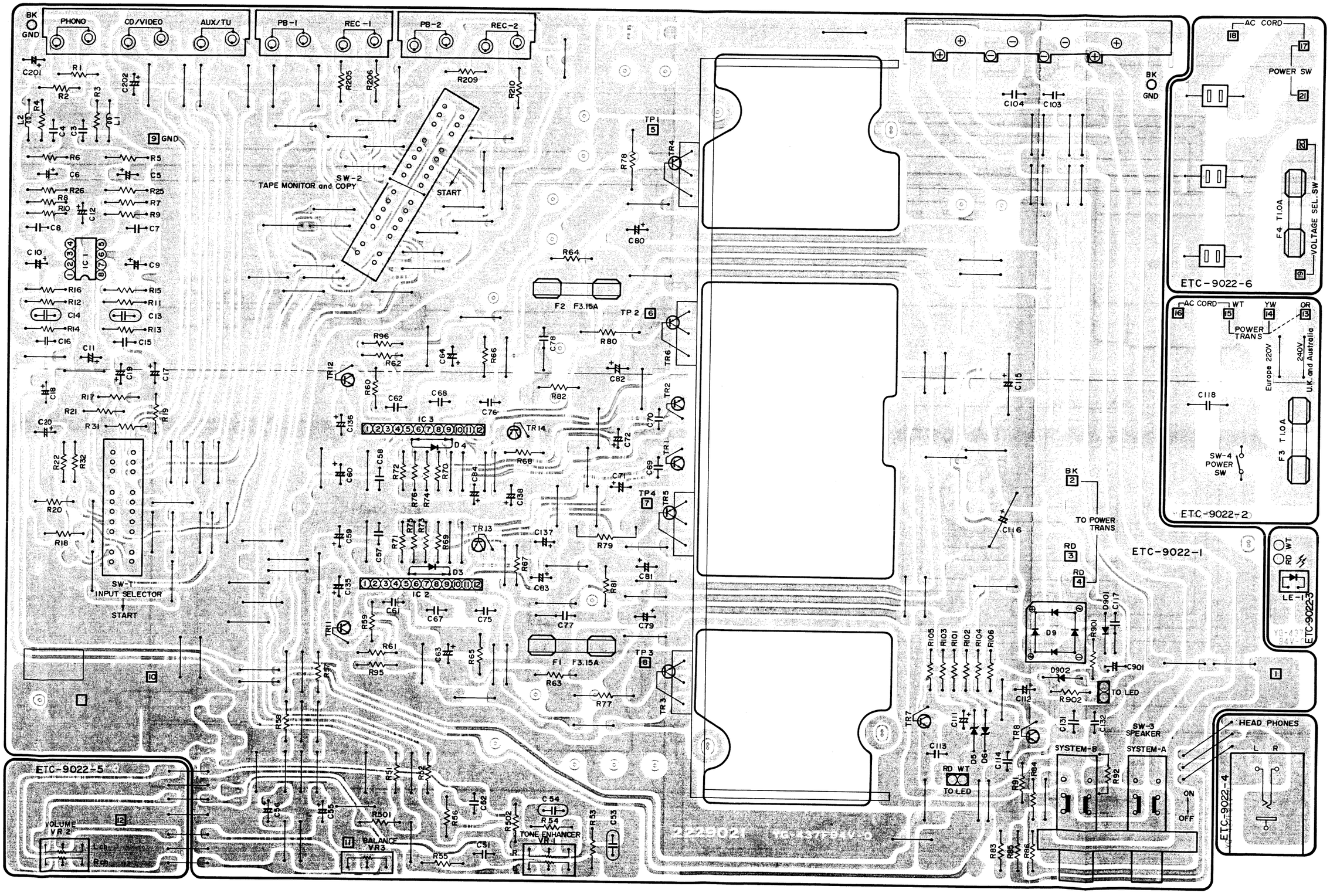
ETC9022B POWER AMP UNIT P/LIST For E1

(Same as ETC9022 except the followings)

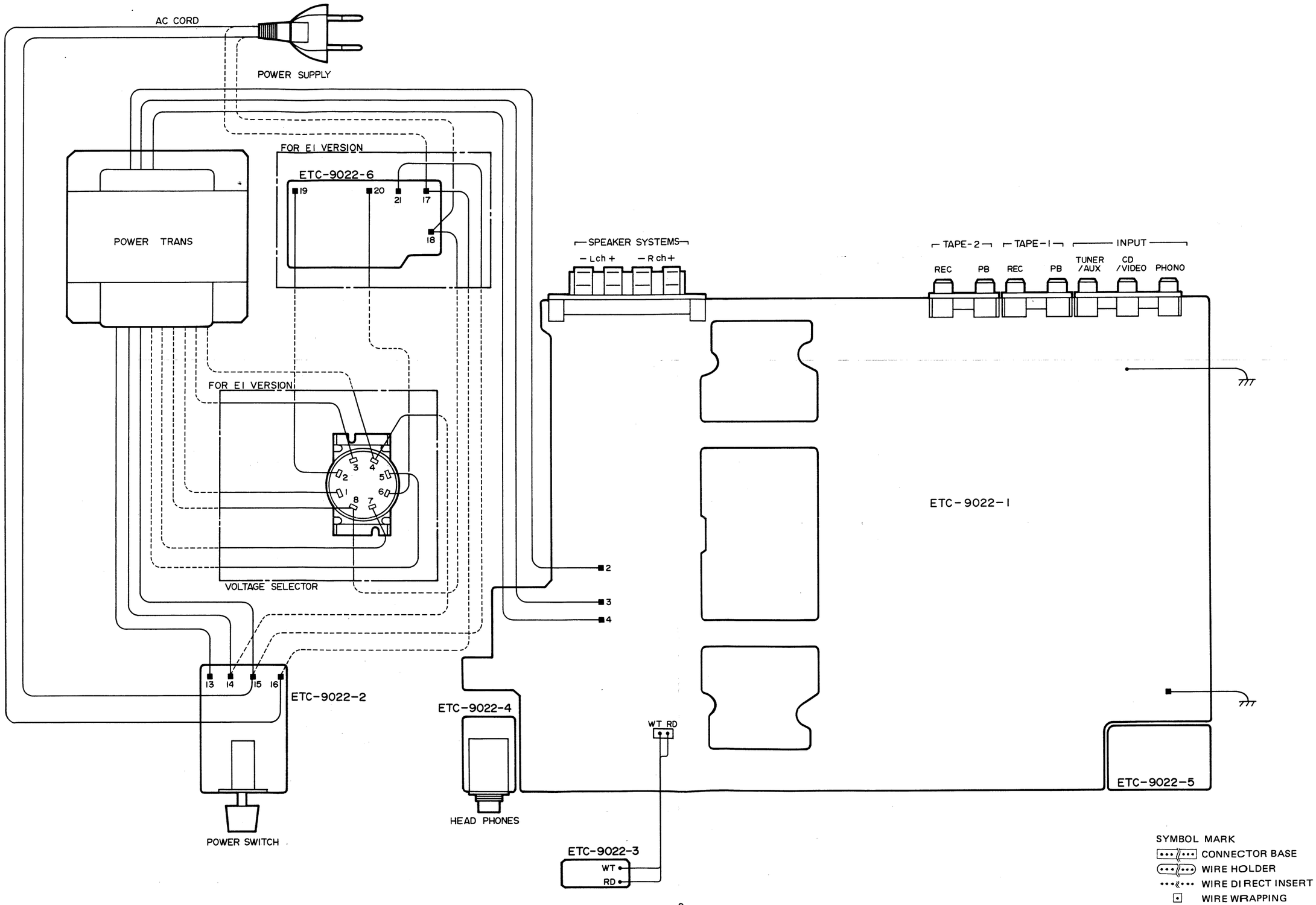
Ref. No.	Part No.	Part Name & Descriptions
		CAPACITORS
⚠ C118	2568003000	0.01μF ±20% 250V METALIZED (CHANGE)
		FUSE
⚠ F003	2061039063	FUSE 2A (CHANGE)
⚠	2061039034	FUSE 1.0A (ADD)

Ref. No.	Part No.	Part Name & Descriptions
		OTHER PARTS
	2090008120	JUMPER WIRE P=10mm USED 113 (CHANGE)
	5130886005	FUSE LABEL (T. 2A) (ADD)
	2020022008	FUSE HOLDER USED 8 (CHANGE)
⚠	2033922001	AC OUTLET (3P) (ADD)

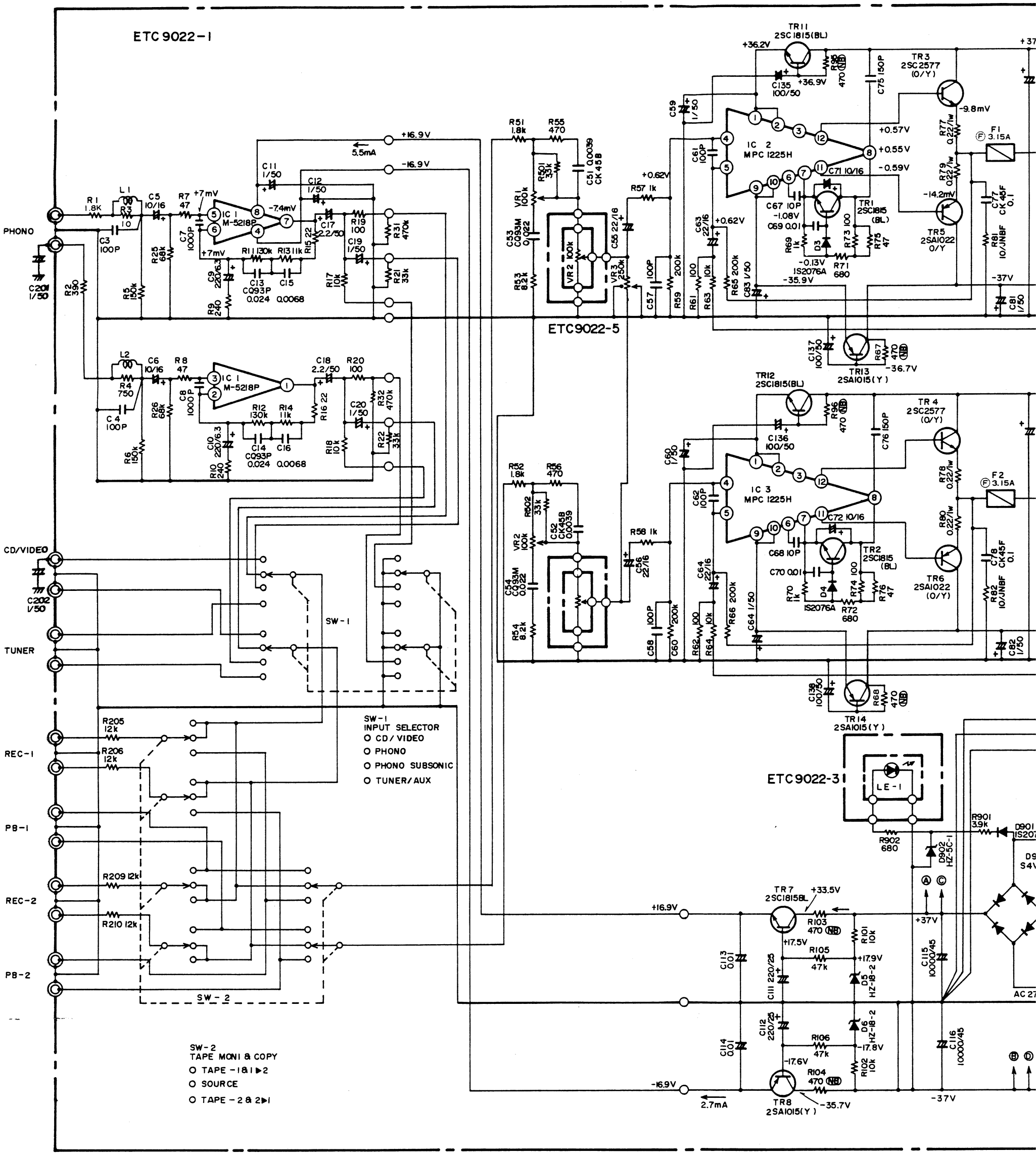
ETC9022 POWER AMP UNIT



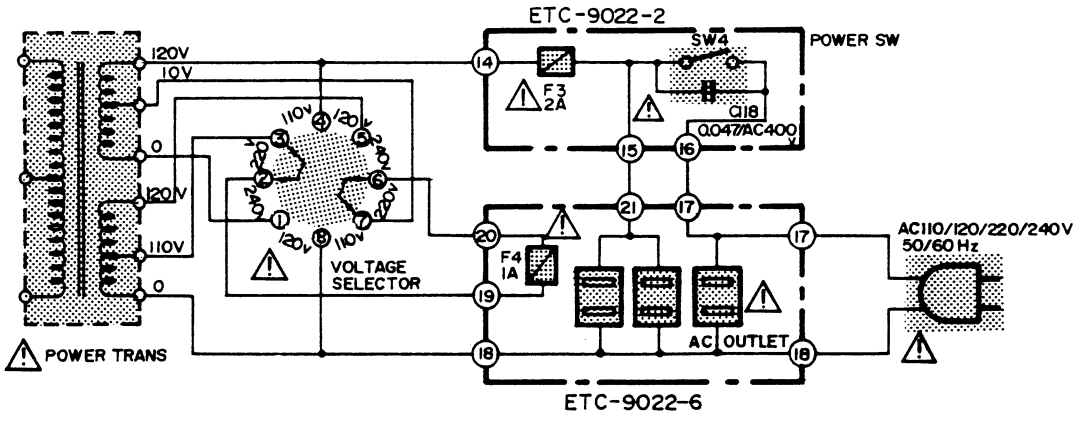
WIRING DIAGRAM
(This figure is the specifications of E2)



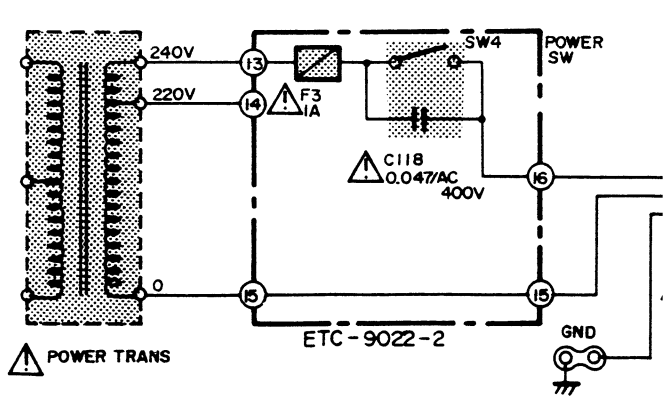
SCHEMATIC DIAGRAM



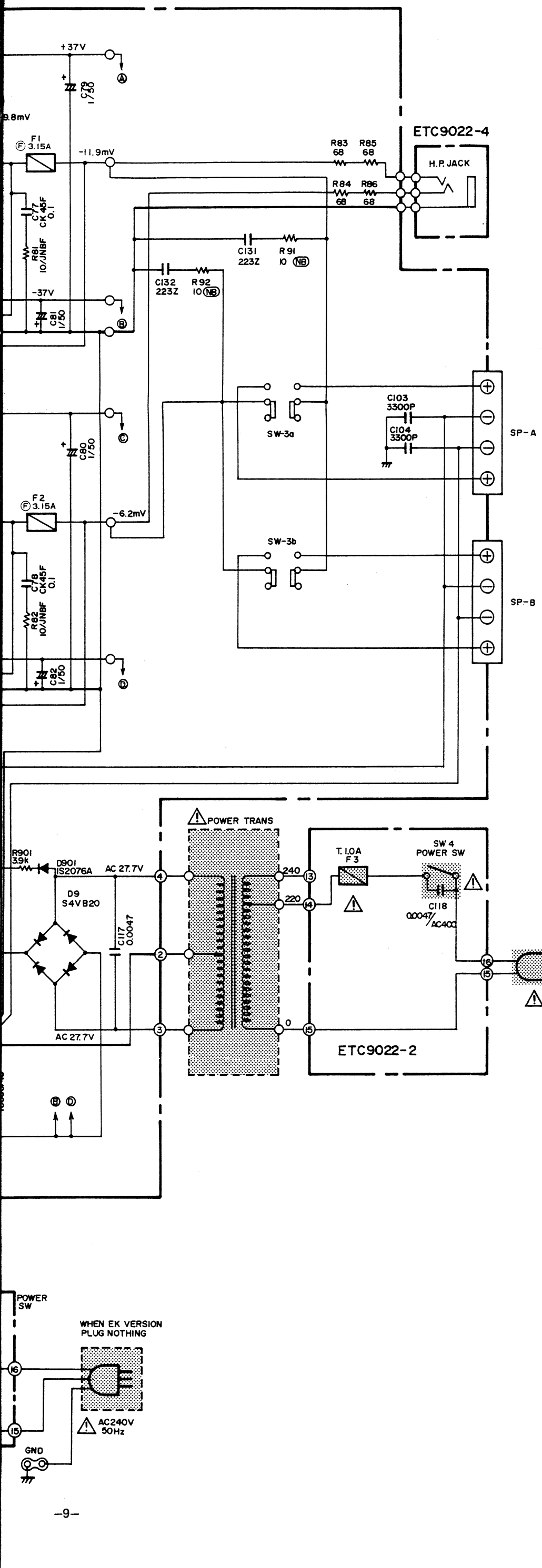
(E1)



(EK/EA)



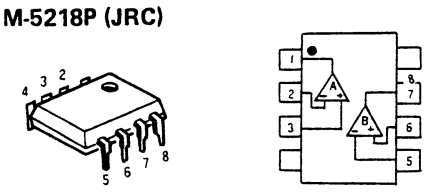
⚠ ☐ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



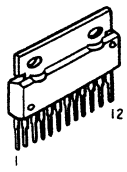
SEMICONDUCTORS

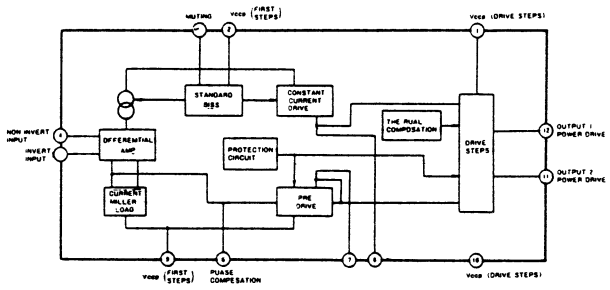
• IC's

M-5218P (JRC)



μPC1225H(NEC)

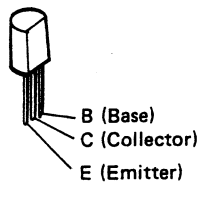


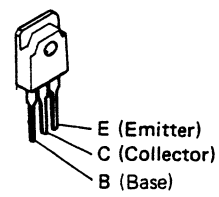


• TRANSISTORS

2SA1015(Y)
2SC1815(BL)

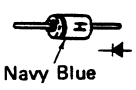
2SA1102(O/Y)
2SC2577(O/Y)



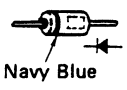


• DIODES

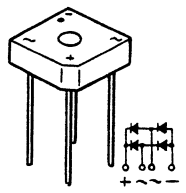
1S2076A



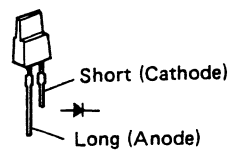
HZ5C-1
HZ18-2



S4VB20



SEL1123R (Red)



	R1, R2	L1, L2	R3, R4	C7, C8
E2	1.8K	Yes	750	1000P
EK/EA	1.8K	Yes	750	1000P
E1	390	No	Jumper	No

NOTES
ALL RESISTANCE VALUES IN OHM K = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITIO
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

EXPLODED VIEW OF CHASSIS AND CABINET
(This figure is specifications of E2)

⚠ D
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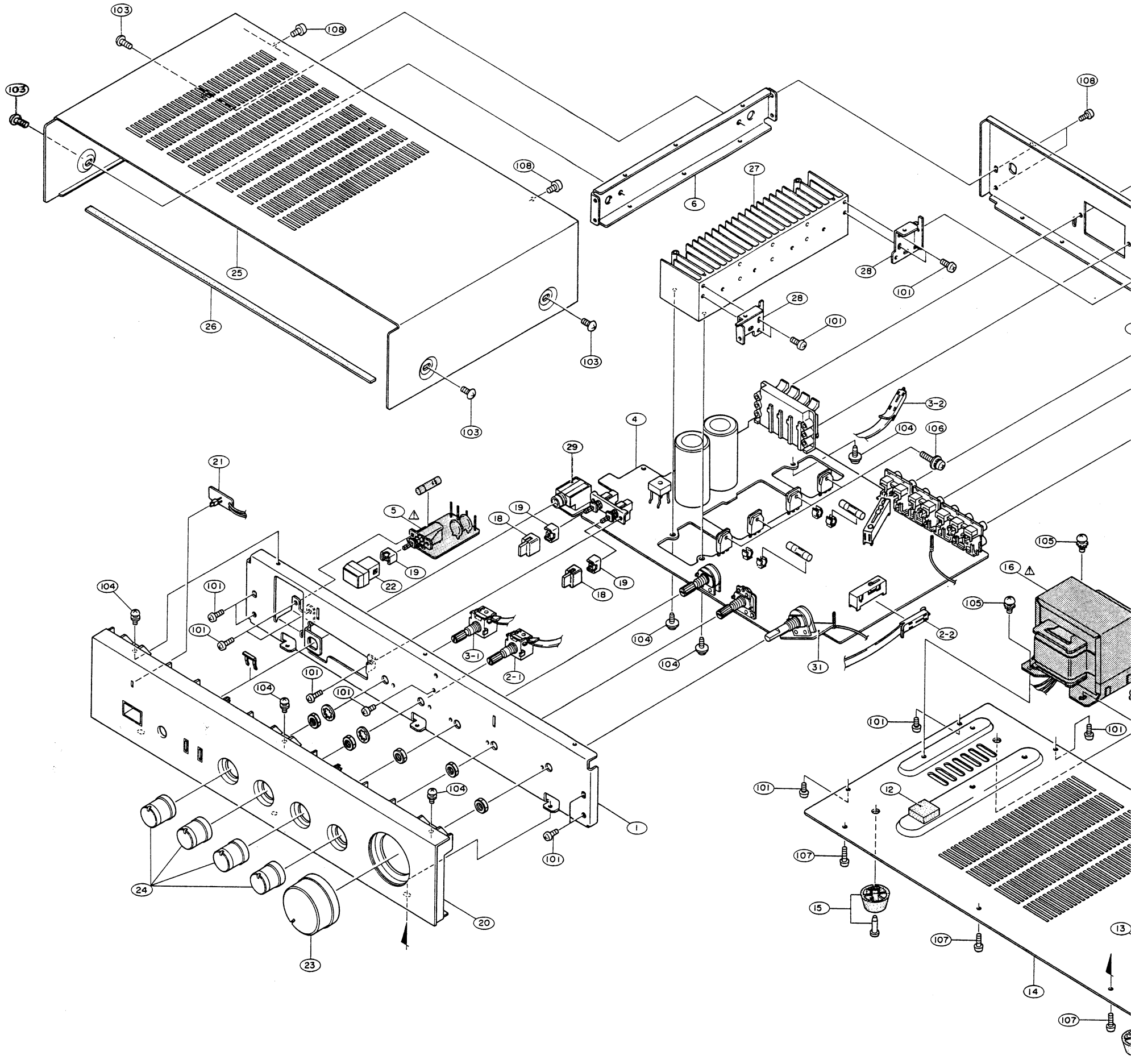


Note: 1. See addendum list below for the parts with asterisk (*) on the Ref. No. and the other parts not included in the list.
2. ⋆ Marked not included EXPLODED VIEW.
3. This list is prepared based on E2 and black version.

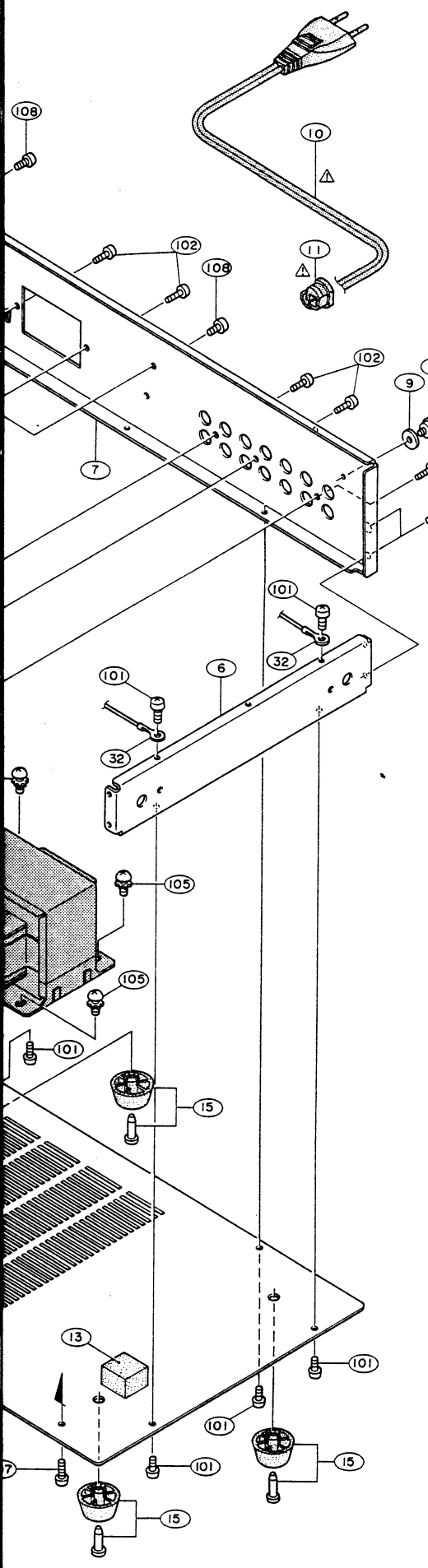
EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions	Q'ty
1	4119008106	FRONT CHASSIS	1
2	2123618005	ROTARY REMOTE SW	1
3	2124505010	ROTARY REMOTE SW TAPE MONITOR	1
* 4	ETC9022-1	POWER AMP UNIT ASS'Y	1S
⚠ * 5	ETC9022-2	POWER SW UNIT	1S
6	4119007000	SIDE CHASSIS	2
* 7	1059027101	BACK PANEL	1
8	2050071016	TERMINAL ASS'Y	1
9	4770018001	WASHER (P-87)	1
⚠ * 10	2062002031	AC CORD	1
⚠ * 11	4450020005	CORD BUSH	1
12	4610114023	CUSHION	1
13	4610114007	CUSHION	2
14	1059026102	BOTTOM COVER	1
15	1040111000	FOOT	4
⚠ * 16	2339522008	POWER TRANS.	1
* 17	4450033005	WIRE CLAMP BAND	4
18	1130536045	PUSH KNOB(B) FOR SP	2
19	1140056007	FLEXIBLE RING	3

Ref. No.	Part No.	Part Name & Descriptions	Q'ty
20	1469020002	FRONT PANEL	1
* 21	ETC9022-3	LED UNIT	1S
22	1139030102	PUSH KNOB FOR POWER	1
23	1129008005	VR KNOB FOR MAIN VOL.	1
24	1129009004	KNOB FOR BAL. TONE FANC.	4
25	1029008008	TOP COVER	1
26	1220069008	SPACER	1
27	4179002100	POWER RADIATOR (ETC 9022)	1
28	4129016104	BRACKET (ETC 9022)	2
29	2048167000	HEADPHONE JACK (ETC 9022)	1
30	2129513007	2P PUSH SW FOR SP (ETC 9022)	1

Ref. No.	Part No.	Part Name & Descriptions	Q'ty
⚠ * 31	ETC9022-5	VOLUME UNIT	1S
32	2030241057	1P CONTRACT. ASS'Y (ETC9022)	2
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
		SCREWS	
101	4737002005	TAPPING SCREW(S) 3x6	20
102	4737500044	TAPPING SCREW(P) 3x8 (B)	5
* 103	4734454038	TAPPING SCREW(S) 4x8 (B)	4

⚠ ☐ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



DENON

ADDENDUM LIST

Ref. No.	Part Name & Descriptions	Part No. EK for U.K.	EA for Australia	E1 for Asia
4	Power Amp Unit Assy	ETC9022-1	ETC9022-1	ETC9022B-1
5	Power SW Unit	ETC9022-2	ETC9022-2	ETC9022B-2
7	Back Panel	1059027101	1059027101	1059033001
⚠ 10	AC Cord	2062020000	2062012018	2006031026
⚠ 11	Cord Bush	4450053001	MD-2982H	4450028007
⚠ 16	Power Trans	2339522008	2339522008	2339527003
21	LED Unit	ETC9022-3	ETC9022-3	ETC9022B-3
⚠ 31	Volume Unit	ETC9022-5	ETC9022-5	ETC9022B-5
⚠ 50	Voltage Sel. Switch	–	–	2120186006
⚠ 51	AC Outlet Unit	–	–	ETC9022B-6
52	Notice Sheet		5130209006	–
53	Earth Label	5130140000	5130140000	–
54	Caution Sheet	5130364006	–	–
55	Voltage Label	5130362008	5130362008	–
56	Blind Sheet	5230348006	5130348006	–
57	Notice Sheet	–	5130210008	–
58				
103	Tapping Screw 4x8 For Power/Trans	4700030017	47300030017	4737004003
110	Tooth Washer ϕ3	4753001051 (4)	4753001051 (4)	–
111	Tooth Washer ϕ4	4753100004 (2)	4753100004 (2)	–
112	Pan Screw 3x6	–	–	4737002005
205	Control Card	–	–	–

NIPPON COLUMBIA CO., LTD.
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CABLE: NIPPONCOLUMBIA TOKYO

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Q'ty
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Ref. No.	Part No.	Part Name & Descriptions	Q'ty
104	4700026005	TAPPING SCREW WITH W.(S) 3x8	7
105	4700030017	TAPPING SCREW WITH W.(S) 4x8 TWB	4
106	4700012022	PAN SCREW WITH S.W.W 3x12	4
107	4737002021	TAPPING SCREW(S) 3x8 (B)	3
108	4737002034	TAPPING SCREW(S) 3x6 (B)	7
109			
PACKING & ACCESSORIES (not included EXPLODED VIEW)			
201	5050075006	CABINET COVER	1
202	5039112003	CUSHION	2
*203	5019102020	CARTON CASE	1
204	5119134008	INST. MANUAL	1
*205	5138295009	CONTROL CARD	1
206	5040079012	STYLEN PAPER	1
207			